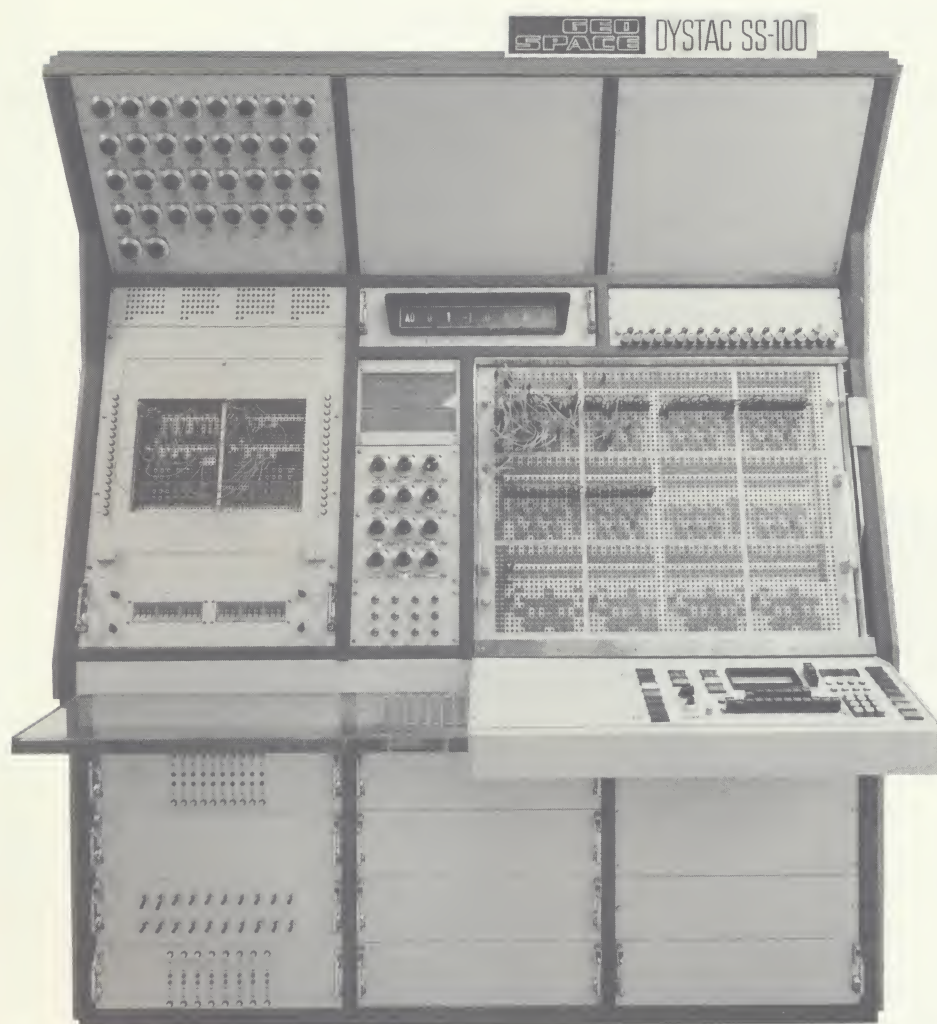


GEO SPACE DYSTAC SS-100



SOLID STATE
ANALOG AND HYBRID
COMPUTATION
AT ± 100 VOLTS

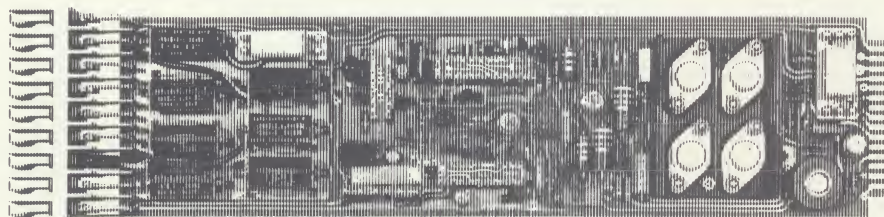
SS-100 DYSTAC® ANALOG COMPUTER

A major advance in solid state amplifier design, the Geo Space OA 100 Operational Amplifier, is one megacycle in bandwidth and is specifically designed for high speed iterative operation. The characteristics of the OA 100 Operational Amplifier, coupled with minimal parasitic capacitance to ground, complete shielding to avoid component crosstalk and the industry's highest speed electronic mode control, yield a superlative third generation analog computer—the Geo Space SS-100 DYSTAC Analog Computer.

THE OA 100 OPERATIONAL AMPLIFIER

Design parameters and operational characteristics of the Geo Space OA 100 Operational Amplifier include:

- One megacycle bandwidth
- Phase Shift at 1 KC of 0.05°
- 45 volt per μ second velocity limit
- All Solid State Chopper Stabilization
- Noise less than 1 millivolt RMS
- Integrator drift less than 1 millivolt/minute
- All Solid State Mode Control (no relays)
- Crosstalk 90 db down at 1 KC



SS-100 ARCHITECTURE

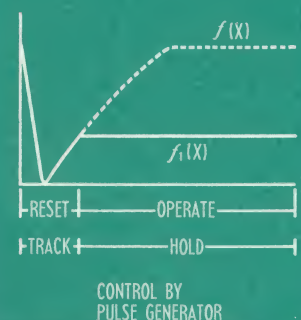
All linear components in the SS-100 Analog Computer are located directly behind the analog patch panel. By locating operational amplifiers, resistor networks, integrator control circuits and other critical components directly behind the patch panel, troublesome problems such as parasitic capacitance and length of signal paths are virtually eliminated. In addition, the extensive use of shielding reduces crosstalk by a factor of 90 db.

Summing junctions and bases of operational amplifiers are brought to within *inches* of the patch panel—a major achievement in analog computer packaging techniques.

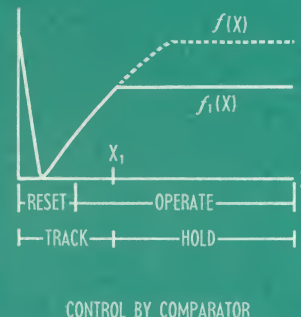
The basic single console includes a 3600-hole analog patch bay and a 1600-hole control logic system. A completely expanded system doubles the single console capacity. For maximum operator convenience, the analog patch bay is mounted in mirror image on the second console in close proximity to the first.

THE SIX MOST FREQUENTLY USED MEMORY FUNCTIONS

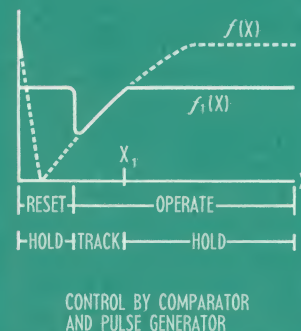
FORWARD MEMORY

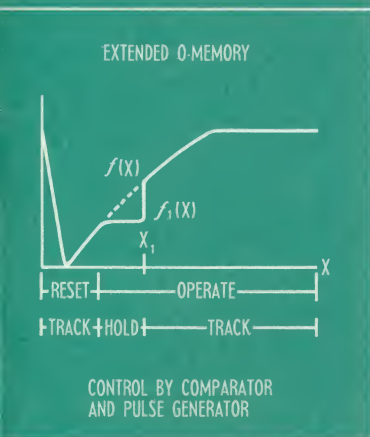
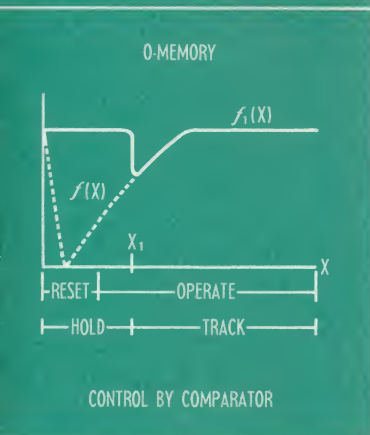
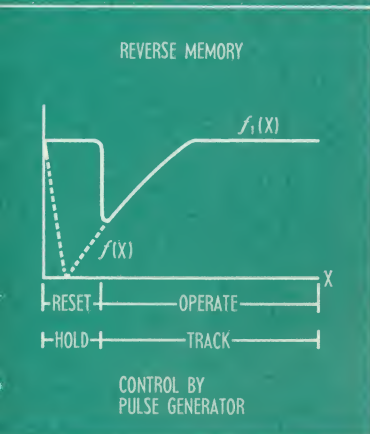
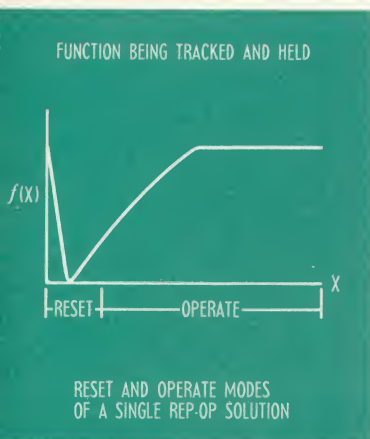


X-MEMORY



EXTENDED X-MEMORY





A Solid State Address System uses a diode matrix-relay combination for addressing analog points—selectable by serial entry of the address on a ten-key keyboard or by digital computer. By using four-digit addresses, 999 points may be addressed for each of 10 functions.

Precision die castings form the patch bay in which plug-in components are completely shielded from crosstalk. A rugged patch bay system accurately indexes the die castings in proper relation to the patch panel. There are no unshielded areas in the entire patching system. Shielded patch cords are inserted in an all metal pre-patch panel.

The cord tip and corresponding patch bay bifurcated spring are shielded from their neighbors by the die casting. Of paramount design consideration was the complete electrical isolation of individual active components.

DYSTAC® (DYnamic STorage Analog Computer)

DYSTAC, a registered trademark of Geo Space Corp., is an analog computational philosophy employing digital time-sharing techniques, whereby intermediate solution values of a problem are stored, then later applied to another portion of the problem—at the discretion of the analyst.

Examples of the six most frequently used DYSTAC memory functions are shown in the center illustration of this brochure.

FEATURES

Computation Speeds

Independent control of each integrator allows multiple time-base operation. Together with individual capacitor selection, the SS-100 offers flexible amplitude and time scaling capability. Iterative computations at speeds in excess of 5 KC can be obtained. These computational features, when combined with adequate digital logic and Geo Space high speed interface equipment, provide the necessary elements for modern hybrid computer systems.

Geo Space hybrid capabilities include—D/A multipliers, high speed multiplexer and sample and hold amplifiers, all of which are capable of overall conversion rates in excess of 100 KC per second.

System Reliability

Geo Space utilizes selected high AQL silicon solid state semiconductors throughout the SS-100. Failure rate analyses, compiled from field statistics, indicate MTBF's *twenty* times better than comparable vacuum tube systems.

The readout system of the SS-100 uses high speed, gold contact reed relays located on the amplifier printed circuit boards. Epoxy glass printed circuit boards are used throughout the SS-100 Analog Computer. All signal switching contacts and connectors are gold plated. Experience has shown that this is the only satisfactory solution to contact contamination and dry circuit problems.

Integrated circuits are employed in integrator mode control and asynchronous digital logic circuits.

ANALOG AND HYBRID APPLICATIONS

Typical analog and hybrid computation application areas include the following problem solutions:

- Solution of Partial Differential Equations
- Chemical Kinetics
- Correlation and Optimization
- Information Theory
- Instrument Analysis and Control
- Aerospace/Aircraft Simulation
- Biomedical and Life Sciences Applications

PARTIAL LIST OF COMPONENTS

Item	Maximum Complement
Summer Amplifiers	108
Summer-Integrators	72
Inverters	196
Potentiometers, Servo-Set or Manual	264
Quarter Square Multipliers	80
Function Generators	32
Electronic Comparators	32
Electronic D/A Switches	32
DYSTAC Switches	64
Sample / Hold Amplifiers	64
Sin-Cos Generators	6
Resolvers	8
D/A Multipliers	32
Parallel Digital Logic	Over 100 gates

SPECIFICATION SUMMARY

General

Fully wired for plug-in expansion
100 volt solid state
Designed for analog or hybrid operation
Interface to any present generation digital computer
Completely shielded
Patented all-electronic mode control

Components

Critical components directly behind patch panel
Separate logic patch panel
Megacycle amplifiers
Integrator control individual or by quadrant
Complete product line of analog non-linear equipment

Input/Output

Digital input—100 KC
Servo-set potentiometers
Display unit—10 channel
X-Y plotter
Magnetic tape

**GEO
SPACE**
CORPORATION
COMPUTER DIVISION

A SUBSIDIARY OF WESTEC CORPORATION



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GEO SPACE COMPUTER PRODUCTS
MARKETING

GEO SPACE CORPORATION
Computer Division
3009 South Post Oak Road
Houston, Texas 77027

GEO SPACE ANALOG / HYBRID
MARKETING

GEO SPACE CORPORATION
Computer Division
3009 South Post Oak Road
Houston, Texas 77027

Gentlemen:
I would be interested in receiving additional information on:

- ☐ Geo Space SS-100 Product Bulletin
- ☐ Geo Space Analog / Hybrid Products
- ☐ Your regular mailing list
- ☐ Have a Geo Space Technical Representative call

This information required for:

- ☐ Immediate Procurement
- ☐ Future Procurement
- ☐ Reference Only
- ☐ A solution to my problem outlined below

Remarks _____

Name _____

Company _____

Address _____

State _____

Title _____

City _____

Zip _____

Gentlemen:
I would be interested in receiving additional information on:

- ☐ Geo Space DP-203 Digital CRT Plotter
- ☐ Geo Space CP-205 21 Channel to System / 360 Input Data System
- ☐ Your regular mailing list
- ☐ Have a Geo Space Technical Representative call

This information required for:

- ☐ Immediate Procurement
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